

**M COSCO BUSAN**  
IMO No. 9231743

**BCD - 442/07**  
Date 2007-11-13

**Position Paper**  
**of**  
**Germanischer Lloyd**  
**(2007-11-13)**

**Ship name:** COSCO BUSAN

**Owner / Managing owner:** Synergy Marine Ltd.

**GL - register No.:** 130056

**IMO No.:** 9231743

**M COSCO BUSAN**  
IMO No. 9231743

**BCD - 442/07**  
Date 2007-11-13

**Subject:**

Side structure damage (PS) of the a.m. vessel due to collision with Oakland Bay Bridge on 2007-11-07.

**Findings (based on GL - Survey Statement 18, dated 2007-11-07):**

Due to the collision vessels side shell plating found breached in way of the No.2 W.B.T. (PS), No.3 F.O.T. (PS) and No.4 F.O.T. (PS) from frame 128 to 150 and 3 meters in height between 14000mm and 17000mm above base line. Furthermore the internal structure in this area found almost destroyed. The extend of the damage reaches deep to the longitudinal bulkhead (PS) partly. Within this area the longitudinal bulkhead found partly buckled and punctured in cargo hold 2.

Tanks and cargo holds inspected already: No.2 W.B.T. (PS), Cargo hold No.2 and No.3  
(no close-up yet)

Tanks to be inspected: No.3 F.O.T. (PS) and No.4 F.O.T. (PS)

**Temporary repairs:**

Having assessed the condition of the ship structure by calculation a proposal for a temporary repair has been worked out. The extent of the temporary repair is based on the remaining structural strength of the vessel after the collision and on the expected sea loads on the Pacific Ocean during winter time. The proposal for temporary repair has been send to the owner yesterday. It contains the closing of the open shell plating by means of steel plates (min. 10mm) including provisional rebuilding of the web frames (L-profile, min. height 400mm, 500mm overlapping) according to the original frame pattern and one vertical intermediate buckling stiffener in between two frames. Additionally a longitudinal (L-profile, min. 250x50) has to be fitted intercostal.

The punctured longitudinal bulkhead has to be closed by means of doubler. Web frames on the longitudinal bulkhead which will be found destroyed have to be temporarily rebuilt from the cargo hold side.

The temporary repair has to be carried - out prior departure from the San Francisco Bay area and has to be carried - out to the satisfaction of the attending-GL - Surveyor.

The above mentioned is based on the present information at hand and can vary due to findings during the outstanding close-up inspection of No.3 F.O.T. (PS) and No.4 F.O.T. (PS).

**M COSCO BUSAN**  
IMO No. 9231743

*BCD - 442/07*  
*Date 2007-11-13*

**Forces and bending moments:**


Due the fact that the damaged area is close to vessel's neutral axis there is only minor loss of global longitudinal strength. Nevertheless restrictions with regard to the maximum shear forces and the maximum bending moments in way of the affected area will be given if the vessel will sail partly loaded to Far East.

**The restrictions are:**

- Max. shear at frame 132 and 137:  $\pm 30\,000$  KN
- Max. shear at frame 142:  $\pm 25\,000$  KN
- Max. bending moment: 75 %

Hence intended load case to be calculated by the loading computer and the input data and results to be send to Germanischer Lloyd / Dept. BCD for review.

Hamburg, 13<sup>th</sup> of November 2007

  
Norbert G. Erles

  
Tim de Bruyne - Ludwig